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acid fragment comprising the primers. Accordingly, a "substantial portion" of a nucleotide sequence comprises a nucleotide sequence that will afford specific identification and/or isolation of a nucleic acid fragment comprising the sequence. The instant specification teaches amino acid and nucleotide sequences encoding polypeptides that comprise one or more particular plant proteins. The skilled artisan, having the benefit of the sequences as reported herein, may now use all or a substantial portion of the disclosed sequences for purposes known to those skilled in this art. Accordingly, the instant invention comprises the complete sequences as reported in the accompanying Sequence Listing, as well as substantial portions of those sequences as defined above.

Paragraph at page 23, lines 18 through 34:

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cDNA clones encoding genes involved in petroselinic acid biosynthesis were identified by conducting BLAST (Basic Local Alignment Search Tool; Altschul et al. (1993) *J. Mol. Biol.* 215:403-410) searches for similarity to sequences contained in the BLAST "nr" database (comprising all non-redundant GenBank CDS translations, sequences derived from the 3-dimensional structure Brookhaven Protein Data Bank, the last major release of the SWISS-PROT protein sequence database, EMBL, and DDBJ databases). The cDNA sequences obtained in Example 1 were analyzed for similarity to all publicly available DNA sequences contained in the "nr" database using the BLASTN algorithm provided by the National Center for Biotechnology Information (NCBI). The DNA sequences were translated in all reading frames and compared for similarity to all publicly available protein sequences contained in the "nr" database using the BLASTX algorithm (Gish and States (1993) *Nat. Genet.* 3:266-272) provided by the NCBI. For convenience, the P-value (probability) of observing a match of a cDNA sequence to a sequence contained in the searched databases merely by chance as calculated by BLAST are reported herein as "pLog" values, which represent the negative of the logarithm of the reported P-value. Accordingly, the greater the pLog value, the greater the likelihood that the cDNA sequence and the BLAST "hit" represent homologous proteins.

IN THE CLAIMS

Please cancel claims 1-26 without prejudice to or disclaimer of the subject matter recited therein.

Please add the following claims 27-45:

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27. (new) An isolated polynucleotide comprising:

(a) a nucleotide sequence encoding a polypeptide having  $\Delta^4$ -16:0-ACP desaturase activity, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2 have at least 75% sequence identity based on the Clustal alignment method, or  
(b) the complement of the nucleotide sequence of (a).

28. (new) The polynucleotide of Claim 27, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2 have at least 80% sequence identity based on the Clustal alignment method.

29. (new) The polynucleotide of Claim 27, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2 have at least 85% sequence identity based on the Clustal alignment method.

30. (new) The polynucleotide of Claim 27, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2 have at least 90% sequence identity based on the Clustal alignment method.

31. (new) The polynucleotide of Claim 27, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2 have at least 95% sequence identity based on the Clustal alignment method.

32. (new) The polynucleotide of Claim 27, wherein the amino acid sequence of the polypeptide comprises the amino acid sequence of SEQ ID NO:2.

33. (new) The polynucleotide of Claim 27 wherein the nucleotide sequence comprises the nucleotide sequence of SEQ ID NO:1.

34. (new) An isolated nucleic acid molecule comprising:

(a) at least 300 nucleotides and  
(b) said isolated nucleic acid molecule remains hybridized to the isolated polynucleotide of Claim 33 under a wash condition of 0.1X SSC, 0.1% SDS, and 65°C.

35. (new) A vector comprising the polynucleotide of Claim 27.

36. (new) A chimeric gene comprising the polynucleotide of Claim 27 operably linked to at least one regulatory sequence.

37. (new) A method for transforming a cell, comprising transforming a cell with the polynucleotide of Claim 27.

38. (new) A cell comprising the chimeric gene of Claim 36.

39. (new) A method for producing a plant comprising transforming a plant cell with the polynucleotide of Claim 27 and regenerating a plant from the transformed plant cell.

40. (new) A plant comprising the chimeric gene of Claim 36.

41. (new) A seed comprising the chimeric gene of Claim 36.

42. (new) A method for production of a polypeptide having  $\Delta^4$ -16:0-ACP desaturase activity comprising the steps of cultivating the cell of Claim 38 under conditions that allow for the synthesis of the polypeptide and isolating the polypeptide from the cultivated cells, from the culture medium, or from both the cultivated cells and the culture medium.

43. (new) A method for altering the level of  $\Delta^4$ -16:0-ACP desaturase expression in a host cell, the method comprising:

- (a) transforming a host cell with the chimeric gene of Claim 36; and
- (b) growing the transformed cell in step (a) under conditions suitable for the expression of the chimeric gene.

44. (new) A method for producing petroselinic acid in a plant, the method comprising:

- (a) transforming a plant with a chimeric gene comprising the isolated polynucleotide of Claim 27 or a functionally equivalent subfragment thereof operably linked to at least one suitable regulatory sequence;
- (b) growing the transformed plant under conditions suitable for the expression of the chimeric gene; and
- (c) selecting those transformed plants producing petroselinic acid.

45. (new) A method for producing seed oil containing fatty acids having petroselinic acid in the seeds of plants which comprises:

- (a) transforming a plant with a chimeric gene comprising the isolated nucleic acid fragment of Claim 27 or a functionally equivalent subfragment thereof operably linked to at least one suitable regulatory sequence;
- (b) growing a fertile mature plant from the transformed plant cell of step (a);
- (c) screening progeny seeds from the fertile plants of step (b) for altered levels of acetylenic fatty acids; and
- (d) processing the progeny seed of step (c) to obtain seed oil containing petroselinic acid.

#### REMARKS

Claims 27-45 are now pending, with claims 27 and 34 being independent claims.

Claims 1-26 have been canceled without prejudice to or disclaimer of the subject matter recited therein.

Claims 27-45 have been added. Support for the reference to " $\Delta^4$ -16:0-ACP desaturase activity" in claim 27 is found in Example 8, pages 31-33 of the specification. Support for the sequence identities recited in claims 27-31 is found at least in the paragraph beginning on line 16 of page 9 of the specification. Support for claims 35-38 are found at least in Examples 5-7, pages 26-31 of the specification. Support for claim 39 is found at least in Examples 5-6, pages 26-30 of the specification. No new matter has been added.

The specification has been amended at two locations to remove reference to the following URL: [www.ncbi.nlm.nih.gov/BLAST/](http://www.ncbi.nlm.nih.gov/BLAST/).

#### RESPONSE TO RESTRICTION REQUIREMENT

Applicants hereby elect, without traverse, the subject matter of Group I (claims 1-13, 21-23, 25, and 26). Applicant additionally elects the pair of sequences (the polynucleotide of SEQ ID No:1 encoding the polypeptide of SEQ ID No:2) that encodes a single amino acid sequence having  $\Delta^4$ -16:0-ACP desaturase activity. These elections are made subject to Applicants' right to pursue the non-elected subject matter in a divisional or divisional applications pursuant to 35 USC §121.

Applicants respectfully submit that pending Claims 27-45 are directed to the elected invention, Group I, SEQ ID NO:1/2.

A petition for a two (2) month extension of time and version with markings to show changes made accompany this response.

Please charge any fees or credit any overpayment of fees which are required in connection herewith to Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company).

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,

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